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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/769,159	01/29/2004	Byoung-Ok Min	P/923-374	7772
2352 7590 03/07/2007 OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			EXAMINER CANNING, ANTHONY J	
			ART UNIT 2879	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
3 MONTHS		03/07/2007	PAPER	

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

**Office Action Summary**

Application No.

10/769,159

Applicant(s)

MIN, BYOUNG-OK

Examiner

Anthony J. Canning

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Acknowledgement of Amendment*

1. The amendment to the instant application was entered on 12 December 2006.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ury et al. (U.S. 5,334,913) in view of Kang (U.S. 2003/0057841 A1).
3. As to claim 1, Ury et al. disclose a lighting apparatus using microwave energy (column 1, lines 67-68), including: a casing (see Fig. 1, item 2; column 2, lines 26-30); a reflector fixed to an outer surface of the casing (see Fig. 1, item 8; column 3, lines 3-5); a magnetron (column 2, lines 66-67, not shown in the drawing); a waveguide (see Fig. 1, item 70; column 2, lines 65-67) for guiding microwave energy; a resonator disposed inside the reflector and (see Fig. 1, item 3; column 2, lines 26-36) providing a resonant region in which the microwave energy is resonated (column 2, lines 26-36); a bulb disposed inside the resonator (see Fig. 1, item 5; column 2, lines 37-43), and filled with a material which emits light (column 2, lines 44-52), when excited by the microwave energy (column 2, lines 44-52); and a rear mirror (see Fig. 1, item 21; column 4, lines

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1-11) integrally the bulb stem (column 4, lines 10-11) and integrally rotatable with the bulb is rotated (column 4, lines 10-11) for forwardly reflecting light rearwardly emitted from the bulb (column 4, lines 1-19). Ury et al. fail to disclose that the magnetron is disposed within the casing.

In the same field of endeavor, Kang discloses a lighting apparatus using microwave energy (see Fig. 2; paragraph 0039), wherein the magnetron is disposed within the casing (see Fig. 2, items 100 and 104; paragraph 0039). Kang further discloses that this arrangement allows for a high voltage to be applied to the magnetron as well as a cooling mechanism (paragraphs 0039 and 0040).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Ury et al. to include that the magnetron is disposed within the casing, as taught by Kang, to allow for a high voltage to be applied to the magnetron as well as a cooling mechanism.

4. As to claim 2, Ury et al. and Kang discloses the apparatus of claim 1. Ury et al. further discloses that the rear mirror is formed in a hemispherical shape having a curved shape (see Fig. 1, item 21; column 3, lines 58-68).

5. As to claim 3, Ury et al. and Kang discloses the apparatus of claim 2. Ury et al. further disclose that the bulb is positioned at a focal point of the curved surface of the rear mirror (column 3, lines 58-68).

6. As to claim 4, Ury et al. and Kang discloses the apparatus of claim 1. Ury et al. disclose that the rear mirror is made of a quartz material (column 3, lines 8-13).

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 5-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ury et al. (U.S. 5,334,913) in view of Kang (U.S. 2003/0057841 A1; of record) in further view of Turner et al. (WO 97/27617).

9. As to claim 5, Ury et al. and Kang discloses the apparatus of claim 1. Ury et al. fails to specifically disclose a fixed mirror fixed to the casing at a rear side of the bulb and having a hole in which a bulb stem rearwardly extended from the bulb is rotatably inserted, for forwardly reflecting light emitted to the rear of the bulb.

In the same field of endeavor, Tuner et al. discloses a lighting apparatus using microwave energy (see Fig. 1, item 10; page 4, lines 25-30) further including a fixed mirror (see Fig. 1, item 50; page 6, lines 24-26) fixed to the casing (see Fig. 1, item 20; page 7, lines 5-7) at a rear side of the bulb (see Fig. 1, item 23; page 7, lines 25-27) and having a hole (see Fig. 3, item 53; page 6, lines 28-29) in which a bulb stem (see Fig. 1, item 25; page 6, lines 28-29) rearwardly extended from the bulb is rotatably inserted (page 5, lines 3-5), for forwardly reflecting light emitted to the rear of the bulb (page 7, lines 27-29). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include a fixed mirror fixed to the casing at a rear side of the bulb and having a hole in which a bulb stem rearwardly extended from the bulb is rotatably inserted, for forwardly reflecting light emitted to the rear of the bulb, as taught by Turner et al., to define an optically isolated light transmission chamber.

10. As to claim 6, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. disclose a fixed mirror with a diameter that matches that of the bulb stem (see Fig. 1, items 25 and 50; page 6, lines 28-29). The diameter of the rear reflector of Kang (see Fig. 2, item 135) is much larger than the diameter of the bulb stem (see Fig. 2, item 127). Having the diameter of the fixed mirror smaller than the diameter of the rear mirror will reduce the amount of light lost to the rear of bulb.

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the electrodeless lamp of Kang to include a fixed mirror with a diameter that matches that of the bulb stem, to reduce the amount of light lost to the rear of the bulb.

11. As to claim 7, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is formed in a hemispherical shape having a curved shape (page 7, lines 30-31; convex or concave shapes are hemispherical curved shapes). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

12. Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include a fixed mirror

formed in a hemispherical shape having a curved shape, as taught by Turner et al., to define an optically isolated transmission chamber.

13. As to claim 8, Ury et al., Kang and Turner et al. disclose the apparatus of claim 7. Turner et al. further disclose that the bulb is positioned at a focal point of the curved surface of the fixed mirror (page 7, last paragraph, the reflector can be “contoured as desired” a desired effect is having the bulb placed at a focal point of the curved mirror). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include that the bulb is positioned at a focal point of the curved surface of the fixed mirror, as taught by Turner et al., to define an optically isolated light transmission chamber.

14. As to claim 9, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Kang further discloses that the rear mirror is formed in a hemispherical shape having a curved shape (see Fig. 2, item 134; paragraph 0026, the examiner interprets semicircular as hemispherical).

15. As to claim 10, Ury et al., Kang disclose the apparatus of claim 9. Kang further disclose that the bulb is positioned at a focal point of the curved surface of the rear mirror (paragraph 0024).

16. As to claim 11, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Kang fails to specifically disclose that that the rear mirror is made of a quartz material. It would have been obvious to one having ordinary skill in the art at the time the invention was made to disclose that that the rear mirror is made of a quartz material, since it has been held to be within

the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ.

17. As to claim 12, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is made of a ceramic material (page 6, lines 26-28). Turner et al. further disclose that fixed mirror effectively defines an optically isolated light transmission chamber (page 7, lines 1-2).

Therefore, it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to modify the lighting apparatus of Kang to include that the bulb is positioned at a focal point of the curved surface of the fixed mirror, as taught by Turner et al., to define an optically isolated light transmission chamber.

18. As to claim 13, Ury et al., Kang and Turner et al. disclose the apparatus of claim 5. Turner et al. further disclose that the fixed mirror is made of an optically reflective metal oxide (page 6, line 27). Turner et al. fail to specifically disclose that the optically reflective metal oxide is  $\text{Al}_2\text{O}_3$ ,  $\text{Si}_3\text{N}_4$  or  $\text{AlN}$ . It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose the optically reflective metal oxide to be  $\text{Al}_2\text{O}_3$ ,  $\text{Si}_3\text{N}_4$  or  $\text{AlN}$ , since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ.

### ***Response to Arguments***

Applicant's arguments, see REMARKS/ARGUMENTS, filed 12 December 2006, with respect to the rejection(s) of claim(s) 1-3 under 35 U.S.C. 102(e) have been fully considered and



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are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ury et al. (U.S. 5,334,913). The examiner acknowledges that Kang does not have both a reflector fixed to the outer side of the casing as well as a rear mirror.

***Contact Information***

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anthony J. Canning whose telephone number is (571)-272-2486. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh D. Patel can be reached on (571)-272-2457. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anthony Canning *AC*  
3 March 2007

*K. Guharay*  
KARABI GUHARAY  
PRIMARY EXAMINER  
3/3/07